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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,371	09/30/2003	Julie Y. Qian	SAM0016/US	3227

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EXAMINER	
RODEE, CHRISTOPHER D	
ART UNIT	**PAPER NUMBER**
1756	

DATE MAILED: 05/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/676,371	QIAN ET AL.	
	Examiner	Art Unit	
	Christopher RoDee	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/5/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

Applicants are asked to provide the application number for the application referenced on specification page 11.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 6, 7, 10-16, and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kosel in US Patent 3,753,760 in view of *Handbook of Imaging Materials* to Diamond & Weiss (eds.) New York: Marcel-Dekker, Inc. (11/2001) pp. 242-247, 254-255.

Kosel discloses a liquid electrophotographic developer comprising a solvent having a KB value of 26 to 35 (col. 7, l. 57 – col. 9, Table), a binder resin that is a graft amphipathic copolymer polymer (col. 9, l. 10 – col.10, l. 57; col. 13, l. 18-47), and a colorant, such as a pigment or dye (col. 15, l. 41 – col. 18, l. 20). A charge director is also included in the liquid developer (col. 18, l. 43 – col. 20, l. 43), such as metal soaps (col. 19, l. 46-61). ISOPAR carrier liquids are used in the reference examples.

Kosel does not appear to disclose the addition of an acid or base to the toner to form a positively charged liquid developer but Diamond and Weiss teach the conventional materials for liquid toners (i.e., dispersant, resin, charge control agent, colorant) and useful particle sizes for

the liquid toner. Liquid developers can be of either a positive or negative charge dependent on the charge director and other materials added to the liquid composition. The text teaches that charging in liquid hydrocarbons (e.g., ISOPARs) occurs by formation of micelles at the particle surface by action of the charge directors. For positive charging systems, this process is enhanced by addition of micelle soluble acids, such as p-toluenesulfonic acid, p-nitrobenzoic acid, p-chlorobenzoic acid, phosphoric acid, dichloroacetic acid, and dodecylphosphonic acid. Useful charge directors include metal stearates and naphthenates (p. 244). Diamond also teaches that metal carboxylates are very effective charge control agents for positive toners (p. 255).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add a posittive charge director and a micelle soluble acid to Kosel's liquid developer to produce and enhance the positive charge because Kosel desires a charged liquid toner in order to develop an electrostatic latent image and there are only two possible charging effects, positive and negative. The artisan would choose one of these two options and use known materials to enhance the charging characteristics of the toner, such as a charge director and micelle soluble acids, to optimize the micelle formation of the toner and ensure stable development of the image. Further, because Diamond teaches that the micelle is critical to formation of the charge on the toner particle in the carrier liquid, the artisan would have found it obvious to optimize the size of the micelle and the concentration of the acid in order to effectively positively charge the toner particles. The artisan would have found it obvious to optimize the Tg value of the binder resin given the disclosed monomers to form a toner particle that will fix to the receiver surface during image formation.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kosel in US Patent 3,753,760 in view of *Handbook of Imaging Materials* to Diamond & Weiss (eds.) New York: Marcel-Dekker, Inc. (11/2001) pp. 242-247, 254-255 as applied to claims 1, 6, 7, 10-16, and 18-21 above, and further in view of Roteman *et al.* in US Patent 3,411,936.

Kosel and Diamond were discussed above. These references teach the inclusion of charge control agents to adjust the polarity of charge on the resin particles. The references discuss metal carboxylates but do not specify the specific compounds of claim 17.

Roteman, however, does disclose tin and zirconium carboxylates as additives to liquid toners (col. 2, l. 1-2). These compounds are particularly effective with resinous binders (col. 2, l. 65+) and pigments (col. 2, l. 11-23). The liquid carriers for these toners have a KB value of 27 in the examples.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the charge control agents of Roteman in the invention of Kosel because they permit pigments that are normally heterocharged to be solely charged to a positive charge (col. 2, l. 11-23).

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kosel in US Patent 3,753,760 in view of *Handbook of Imaging Materials* to Diamond & Weiss (eds.) New York: Marcel-Dekker, Inc. (11/2001) pp. 242-247, 254-255 as applied to claims 1, 6, 7, 10-16, and 18-21 above, and further in view of Tamai *et al.* in US Patent 4,062,789.

Kosel and Diamond were discussed above. These references teach the inclusion of charge control agents to adjust the polarity of charge on the resin particles. Diamond discusses the addition of acids to the liquid toner to aid formation of the micelles but does not disclosethe specific acids of the instant claims.

Tamai teaches that organic acids, such as lauric acid (dodecanoic acid), are effective in the formation of a positive liquid toner when a specific copolymer is used as the charge director (col. 2, l. 9-13). This combination is particularly effective for a continuous gradation image (col. 2, l. 1-4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the charge director and organic acid disclosed by Tamai as the charge control materials in Kosel because Diamond teaches that charge control agents are typically added to liquid toners to provide effective positive charge on the toner particles and Tamai discloses a specific combination of charge director and organic acid that will result in good continuous toner images by providing the positive charge on the toners.

Claims 1, 6, 7, and 10-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Qian *et al.* in US Patent Application Publication 2004/0091807 or Qian *et al.* in US Patent Application Publication 2004/0091808 or Qian *et al.* in US Patent Application Publication 2004/0091809 in view of *Handbook of Imaging Materials* to Diamond & Weiss (eds.) New York: Marcel-Dekker, Inc. (11/2001) pp. 242-247, 254-257.

Qian '807 discloses a liquid toner containing a liquid carrier and amphipatic copolymeric binder particles (Abstract). The reference teaches that the polymer particles of the liquid toner are amphipatic graft copolymer particles having an S and D portion (¶ [0089] – [0091], [0094], [0097]). The copolymer has a Tg of from 15 to 55 ° C (¶ [0066]). The toner contains a visual enhancement agent, a charge control agent, such as zirconium tetraoctoate. The liquid carrier has a KB value of 30 ml or less (¶ [0054]).

Qian '808 discloses a liquid toner containing a liquid carrier and amphipatic copolymeric binder particles (Abstract). The reference teaches that the polymer particles of the liquid toner

are amphipatic graft copolymer particles having an S and D portion (¶ [0028], [0088]). The copolymer has a Tg as specified in Tables 2 and 3. The toner contains a visual enhancement agent, a charge control agent, such as zirconium tetraoctoate (¶ [0111] - [0112]). The liquid carrier has a KB value of 30 ml or less (¶ [0065]).

Qian '809 discloses a liquid toner containing a liquid carrier and copolymeric binder particles (Abstract). The reference teaches that the polymer particles of the liquid toner are amphipatic graft copolymer particles having an S and D portion (¶ [0036] – [0039], [0051], [0052], [0082]). The copolymer has a Tg of from 25 to 200 ° C (¶ [0057]). The toner contains a visual enhancement agent, a charge control agent, such as zirconium tetraoctoate (¶ [0095] - [0096]). The liquid carrier has a KB value of 30 ml or less (¶ [0046]).

Each Qian reference does not appear to disclose the addition of an acid or base to the toner to form a positively charged liquid developer but Diamond and Weiss teach the conventional materials for liquid toners (i.e., dispersant, resin, charge control agent, colorant) and useful particle sizes for the liquid toner. Liquid developers can be of either a positive or negative charge dependent on the charge director and other materials added to the liquid composition. The text teaches that charging in liquid hydrocarbons (e.g., ISOPARs) occurs by formation of micelles at the particle surface by action of the charge directors. For positive charging systems, this process is enhanced by addition of micelle soluble acids, such as p-toluenesulfonic acid, p-nitrobenzoic acid, p-chlorobenzoic acid, phosphoric acid, dichloroacetic acid, and dodecylphosphonic acid. Useful charge directors include metal stearates and naphthenates (p. 244). Diamond also teaches that metal carboxylates are very effective charge control agents for positive toners (p. 255).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add a positive charge director and a micelle soluble acid to each of

Qian's liquid developer to produce and enhance the positive charge because Diamond teaches that these components are well known in the art to establish the proper charge on the liquid toner. There are only two possible charging effects, positive and negative. The artisan would choose one of these two options and use known materials to enhance the charging characteristics of the toner, such as a charge director and micelle soluble acids, to optimize the micelle formation of the toner and ensure stable development of the image. Further, because Diamond teaches that the micelle is critical to formation of the charge on the toner particle in the carrier liquid, the artisan would have found it obvious to optimize the size of the micelle and the concentration of the acid in order to effectively positively charge the toner particles. The artisan would have found it obvious to optimize the Tg value of the binder resin based on the guidance in Qian to form a toner particle that will fix to the receiver surface during image formation.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-21 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-20 of copending Application No. 10/676381 in view of *Handbook of Imaging Materials* to Diamond & Weiss (eds.) New York: Marcel-Dekker, Inc. (11/2001) pp. 242-247, 254-257. The copending claims specify a negatively liquid developer having a liquid carrier having a Kauri Butanol number less than about 30 mL; a plurality of negatively charged toner particles dispersed in the liquid carrier, wherein the toner particles comprise a polymeric binder comprising at least one amphipathic graft copolymer comprising one or more S material portions and one or more D material portions; and a charge control adjuvant that is an acid or a base. The claims do not specify a positively charged toner as claimed, but the supporting text shows that the charge director affects the charge on the toner and other components added to the liquid composition. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the toner of the copending claims from negatively charged to positively charged in order to develop the reverse image on a photoreceptor. It is apparent from the art that such a

modification is well within the level of skill in the art. This is a provisional obviousness-type double patenting rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher RoDee whose telephone number is 571-272-1388. The examiner can normally be reached on most weekdays from 6:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cdr
16 May 2005

CHRISTOPHER RODEE
PRIMARY EXAMINER